

## **MODEL PREDICTIVE CONTROLLER WITH LIFE EXTENDING CONTROL**

### **ABSTRACT OF THE DISCLOSURE**

An MPC Control system provides a life extending control that includes life-extending goals in the performance index of the MPC controller and limits in the inequality equations. The MPC controller performs the normal functions of a control system for a physical system, but does so in a manner that extends the life or time-to-next maintenance or reduces the number of parts that need to be replaced. If the life extending functions do not degrade other control functions, they can be always enabled, making the system less expensive to maintain. If the life extending functions degrade some other control functions, they can be adjusted in-the-field or on-the-fly to stretch the time-until-maintenance until it is more convenient, but with some impact on performance.